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cc Tom

State of Utah
JON M. HUNTSMAN, JR.
Governor

GARY HERBERT
Lieutenant Governor

Department of
Environmental Quality

Richard W. Sprott
Executive Director

DIVISION OF WATER QUALITY
Walter L. Baker, P.E.
Director

November 26, 2008

Toby Wright
Environmental Manager
Uranium One USA Inc.
3801 Automation Way
Suite 100
Fort Collins, CO 80525

Dear Mr. Wright:

Subject: Request for Ground Water Discharge Permit-By-Rule
Velvet Mine Pilot Dewatering Treatment System: **DWQ Approval**

The Division of Water Quality (DWQ) received a request on November 3, 2008 from Uranium One USA Inc. for a Ground Water Discharge Permit-By-Rule for a Pilot Dewatering Treatment System at the Velvet Mine in Section 3, Township 31 South, Range 25 East, San Juan County, Utah. To support this Ground Water Discharge Permit-By-Rule request, Uranium One provided the following supporting information:

- Checklist of Ground Water Discharge Permit application requirements in UAC R317-6-6.3;
- Completed Utah Ground Water Discharge Permit Application;
- Ground Water Discharge Control Plan including:
  - Mine Treatment Study
  - Plans and Specifications for Mine Dewatering Pilot Treatment Containment Systems
  - Draft Operating Plan for Mine Dewatering Pilot Treatment System
  - Ground Water Monitoring Quality Assurance Plan
  - Dewatering Pilot Treatment System Contingency and Corrective Action Plan
- Hydrogeologic Report.

According to your application, Uranium One Exploration Inc. is planning to redevelop the Velvet Mine and will first need to dewater the mine workings, which are flooded with ground water that seeps into the mine at about 10 to 15 gallons per minute through the low hydraulic conductivity Moss Back member of the Chinle Formation (ore zone). Uranium One proposes to initiate a four- to six-month pilot dewatering program and associated treatment and surface discharge in order to develop the appropriate treatment technology that will ensure effective long-term mine water treatment and discharge. Surface discharge to an unnamed dry wash will be regulated under a Utah Pollutant Discharge Elimination System (UPDES) permit issued by DWQ.

Pilot Dewatering Treatment System

The pilot treatment facility will be located within the mine permit area above the mine and mineralized zones. A trailer mounted water treatment plant will treat mine water with barium chloride followed by settling to meet the discharge limits in DWQ UPDES Permit UT0025810 in accordance with technology based standards for uranium ore mines (40 CFR 440.32 and 440.33). To insure sufficient settling time and volume for sludge collection, two 40-cubic yard roll off or double-walled Baker (Frac) tanks will be used as settling tanks. Details on the water treatment chemistry, water treatment process, reagent information, chemicals and materials handling plan, and monitoring systems are provided in Attachment A of the Ground Water Discharge Control Plan titled *Mine Water Treatment Report.* All raw water will be pumped directly from the mine workings to above ground single-walled reagent mixing tanks located within secondary containment systems. The secondary containment systems will be bermed areas capable of storing the maximum capacity of the tanks plus 10% to account for rainfall. The secondary containment areas will be lined with a single 60-mil HDPE liner designed and installed to meet ASTM specifications with compatible bedding and cover materials. Some tanks will be housed within a mobile trailer with a floor drain, which will convey any potential process spills into a single walled spill containment tank. The process trailer and the spill containment tank will be placed within a HDPE lined secondary containment area described above. The pilot water treatment and containment system will be constructed in accordance with the Attachment B of the Ground Water Discharge Control Plan titled *Detailed Specifications, Plans and Drawings for Mine Dewatering Pilot Treatment Containment Systems.* The treated effluent from the Baker (Frac) tanks will be discharged by gravity flow to an unnamed dry wash in accordance with the discharge limits and requirements of DWQ UPDES Permit UT0025810.

Hydrogeology

The uppermost aquifer is 750 feet below ground surface in a confined sandstone unit of the upper Moss Back member of the Chinle Formation, which is the ore body and mineralized zone of the mine. Water levels measured in two wells completed in the Moss Back member indicates confined conditions with a hydraulic head over 300 feet above the top of the aquifer. The confined conditions of the Moss Back member are caused by over 400 feet of unsaturated mudstone and sandstone sequences of the overlying Chinle Formation. Ground water quality in the mineralized zone of the Moss Back member is classified as Class III Limited Use Ground Water based on elevated concentrations of uranium, gross alpha, and combined radium-226 and radium-228 above Utah ground water quality standards.

Permit-By-Rule

Based on the following factors, the proposed four- to six-month pilot mine dewatering, treatment, and surface discharge program qualifies for ground water discharge permit-by-rule:

- The short term duration and transient nature of the pilot program;
- Location of the pilot treatment plant above the mine and mineralized zones;
- Employing a Ground Water Discharge Control Plan with engineering controls using above ground storage tanks, HDPE piping, HDPE-lined secondary containment systems, and regular inspections and monitoring;
- A Contingency and Corrective Action Plan is in place to address any potential discharges;
- The uppermost aquifer is 750 feet below ground surface in a confined sandstone unit of the upper Moss Back member of the Chinle Formation, which is the ore body and mineralized zone of the mine;

- Water levels measured in two wells completed in the Moss Back member indicates confined conditions with a hydraulic head over 300 feet above the top of the aquifer;
- The uppermost aquifer is overlain by over 400 feet of unsaturated mudstone and sandstone sequences, which acts as a competent confining zone;
- Ground water quality in the mineralized ore zone of the Moss Back member is classified as Class III Limited Use Ground Water based on elevated concentrations of uranium, gross alpha, and combined radium-226 and radium-228 above Utah ground water quality standards;
- The two existing ground water monitoring wells will be sampled at the conclusion of the pilot program to monitor water quality trends.

While DWQ will not directly regulate pilot dewatering program and associated treatment and surface discharge through a ground water discharge permit, please be aware that discharge of pollutants to ground water is illegal and you would be held responsible if the operation caused damage to beneficial uses of ground water. Accordingly, you should make every effort to prevent spills and discharges of pollutants.

Long-Term Dewatering Treatment System

At the conclusion of the pilot project, a long-term mine water treatment system will be implemented to maintain dewatered conditions in the mine for the full mine life, which is expected to last for 10 to 15 years, depending on future exploration and mine development. During the refurbishment of the mine and the mine dewatering process, additional characterization is planned by Uranium One including the installation of additional ground water monitoring wells, ground water quality sampling, additional spring and seep surveys, and aquifer pumping tests. These additional data will be compiled to support an application for a ground water discharge permit for the long-term mine dewatering treatment system.

If you have any questions about this letter, please contact Rob Herbert, Manager of the Ground Water Protection Section, at rherbert@utah.gov or (801) 538-6038.

Sincerely,

UTAH WATER QUALITY BOARD

Walter L. Baker, P.E.
Executive Secretary

WLB/RFH:mf

Cc: Matt Garn, DWQ
Paul Baker, DOGM
Dave Ariotti, SE District Engineer
SE Public Health Department

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